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**LTE;  
Evolved Universal Terrestrial  
Radio Access Network (E-UTRAN);  
S1 layer 1  
(3GPP TS 36.411 version 18.0.0 Release 18)**



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**Reference**

RTS/TSGR-0336411 vi00

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**Keywords**

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# Foreword

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The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

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# 1 Scope

The present document specifies the standards allowed to implement layer 1 on the S1 interface.

The specification of transmission delay requirements and O&M requirements are not in the scope of the present document.

In the following, 'layer 1' and 'physical layer' are assumed to be synonymous.

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# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1]	3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
[2]	Void
[3]	Void
[4]	Void
[5]	Void
[6]	Void

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# 3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following abbreviations apply:

E-UTRAN	Evolved Universal Terrestrial Radio Access Network
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# 4 Introduction

The main functions of layer 1 are summarized in the following:

- Interface to physical medium;
- Frame delineation;
- Line clock extraction capability;
- Layer 1 alarms extraction and generation;
- Transmission quality control.

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## 5 Layer 1 specifications

The support of any suitable layer 1 technique - like point-to-point or point-to-multipoint techniques - shall not be prevented.

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## 6 Interface to management plane

The description of the interface towards the management plane is out of scope of this document, but at least the following O&M functions should be foreseen:

- Performance monitoring functions;
- Alarm status reporting functions;
- Synchronisation source management.

## Annex A (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2007-09	37	RP-070586			specification presented to TSG-RAN for information	0.0.2	1.0.0
2007-11	38	RP-070849			specification presented to TSG-RAN for approval	1.0.0	2.0.0
2007-12	38				specification approved at TSG-RAN and placed under change control	2.0.0	8.0.0
2008-12	42	RP-080844	001		Rapporteurs Cut	8.0.0	8.1.0
2009-12					Created Rel-9 version based on v8.1.0	8.1.0	9.0.0
2010-12					Created Rel-10 version based on v 9.0.0	9.0.0	10.0.0
2011-06	52	RP-110684	004		Correction of references	10.0.0	10.1.0
2012-09					Update to Rel-11 version (MCC)	10.1.0	11.0.0
2014-09					Update to Rel-12 version (MCC)	11.0.0	12.0.0
2015-12					Update to Rel-13 version (MCC)	12.0.0	13.0.0

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2017-03	SA#75					Promotion to Release 14 without technical change	14.0.0
2018-06	SA#80	-	-	-	-	Promotion to Release 15 without technical change	15.0.0
2020-07	SA#88-e	-	-	-	-	Update to Rel-16 version (MCC)	16.0.0
2022-03	SA#95-e					Promotion to Release 17 without technical change	17.0.0
2024-03	SA#103-	-	-	-	-	Update to Rel-18 version (MCC)	18.0.0



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# History

<b>Document history</b>		
V18.0.0	May 2024	Publication